

WHAT IS CLAIMED IS:

1. An ink jet printing apparatus for printing an image, comprising:
 - an ink droplet forming mechanism including a printhead having at least one nozzle for ejecting a stream of ink droplets having a selected one of at least two different volumes, said ink droplet forming mechanism being adapted to eject from said at least one nozzle at least one of said at least two different ink droplet volumes in succession;
 - a droplet deflector for producing a flow of gas that interacts with said ink droplet stream to separate ink droplets having said different volumes from one another, and
 - a cleaning station formed at least in part from said droplet deflector for providing a flow of fluid over said printhead to clean and maintain said printhead.
2. The ink jet printing apparatus defined in claim 1, wherein said cleaning station provides a flow of liquid cleaning fluid over said printhead.
3. The ink jet printing apparatus defined in claim 1, wherein said fluid flow provided by said cleaning station is a gas flow over said printhead.
4. The ink jet printing apparatus defined in claim 3, wherein said gas flow over said printhead dries liquid cleaning fluid applied to said printhead.

5. The ink jet printing apparatus defined in claim 1, comprising an ink catcher, and said cleaning station provides a cleaning flow of fluid over said ink catcher.

6. The ink jet printing apparatus defined in claim 5, wherein said cleaning flow of fluid is a flow of air that discourages environmental dust and fibers from approaching and adhering to said ink catcher.

7. The ink jet printing apparatus defined in claim 1, wherein said droplet deflector includes a plenum for conducting said flow of gas across said printhead to separate said ink droplets, and said cleaning station is formed at least in part from said plenum.

8. The ink jet printing apparatus defined in claim 7, wherein said cleaning station further includes a source of liquid cleaning fluid, and a valve for selectively connecting said source to said plenum.

9. The ink jet printing apparatus defined in claim 8, wherein said liquid cleaning fluid is a solvent of the same kind used in said ink droplets.

10. The ink jet printing apparatus defined in claim 8, further comprising an ink catcher for catching ejected ink droplets from said printhead not used to print an image, and a recovery reservoir for collecting ink droplets caught by said catcher, wherein said recovery reservoir also collects used liquid cleaning fluid.

11. An ink jet printing apparatus for printing an image, comprising:

an ink droplet forming mechanism including a printhead having at least one nozzle for ejecting a stream of ink droplets having a selected one of at least two different volumes said ink droplet forming mechanism being adapted to eject from said at least one nozzle at least one of said at least two different ink droplet volumes in succession;

a droplet deflector including a pressurized gas source for producing a flow of gas and a plenum for conducting said gas flow across said stream of ink droplets to separate ink droplets having said different volumes from one another, and

a cleaning station formed at least in part from said droplet deflector for providing a flow of fluid over said printhead to clean and maintain said printhead.

12. The ink jet printing apparatus defined in claim 11, wherein said plenum of said cleaning station formed in part from said plenum of said droplet deflector, which conducts a flow of liquid cleaning fluid over said printhead.

13. The ink jet printing apparatus defined in claim 12, wherein said plenum also conducts a flow of gas over said printhead to dry said printhead from said liquid cleaning fluid.

14. The ink jet printing apparatus defined in claim 12, further comprising an ink catcher for capturing ink droplets ejected from said printhead that are not used to form an image, and wherein said plenum directs a flow of gas around said ink catcher to discourage environmental dust and fibers from approaching and adhering to said ink catcher.

15. The ink jet printing apparatus defined in claim 12, wherein said liquid is water, and ink forming said ink droplets is aqueous based.

16. The ink jet printing apparatus defined in claim 12, wherein said cleaning station further includes a source of liquid cleaning fluid, and a valve for selectively connecting said source to said plenum.

17. The ink jet printing apparatus defined in claim 14, further comprising a recovery reservoir for collecting ink droplets caught by said catcher, wherein said recovery reservoir also collects used liquid cleaning fluid.

18. The ink jet printing apparatus defined in claim 11, further comprising a parking mechanism for withdrawing and extending said printhead out of an into an operating position with respect to said apparatus.

19. The ink jet printing apparatus defined in claim 11, wherein said source of pressurized gas is a blower for blowing a pressurized flow of air through said plenum.

20. The ink jet printing apparatus defined in claim 19, wherein said blower is adjustable to blow air flows of greater and lesser pressure through said plenum.

21. The ink jet printing apparatus defined in claim 16, wherein said cleaning station further includes a pump for pressurizing said source of liquid cleaning fluid to provide a pressurized stream of liquid cleaning fluid through said plenum.

22. An ink jet printing apparatus for printing an image, comprising:

an ink droplet forming mechanism including a printhead having at least one nozzle for ejecting a stream of ink droplets having a selected one of at least two different volumes, said ink droplet forming mechanism being adapted to create in succession ink droplets having a smaller volume of said at least two different ink droplet volumes;

a droplet deflector for producing a flow of gas that interacts with said ink droplet stream to separate ink droplets having said different volumes from one another, and

a cleaning station formed at least in part from said droplet deflector for providing a flow of fluid over said printhead to clean and maintain said printhead.

23. The ink jet printing apparatus defined in claim 22, wherein the droplet forming mechanism includes a heater.

24. The ink jet printing apparatus defined in claim 22, wherein said cleaning station provides a flow of liquid cleaning fluid over said printhead.

25. The ink jet printing apparatus defined in claim 22, wherein said fluid flow provided by said cleaning station is a gas flow over said printhead.

26. The ink jet printing apparatus defined in claim 25, wherein said gas flow over said printhead dries liquid cleaning fluid applied to said printhead.

27. The ink jet printing apparatus defined in claim 22, wherein the ink droplets having the smaller volume are created when the ink droplets are ejected from said at least one nozzle.

28. The ink jet printing apparatus defined in claim 22, wherein said droplet deflector includes a plenum for conducting said flow of gas across said printhead to separate said ink droplets, and said cleaning station is formed at least in part from said plenum.

29. The ink jet printing apparatus defined in claim 28, wherein said cleaning station further includes a source of liquid cleaning fluid, and a valve for selectively connecting said source to said plenum.

30. A drop emitter comprising:
an ink droplet forming mechanism including a printhead having at least one nozzle for ejecting a stream of ink droplets having a selected one of at least two different volumes, said ink droplet forming mechanism including a heater;
a droplet deflector for producing a flow of gas that interacts with said ink droplet stream to separate ink droplets having said different volumes from one another, and
a cleaning station formed at least in part from said droplet deflector for providing a flow of fluid over said printhead to clean and maintain said printhead.

31. The drop emitter defined in claim 30, wherein said ink droplet forming mechanism is adapted to form at least one of said at least two different ink droplet volumes in succession.

32. The drop emitter defined in claim 31, wherein said at least one of said at least two different ink droplet volumes is a smaller volume when compared to the volume of the other of said at least two different volumes.

33. The drop emitter defined in claim 30, wherein said ink droplet forming mechanism is adapted to eject from said at least one nozzle at least one of said at least two different ink droplet volumes in succession.

34. The drop emitter defined in claim 30, wherein said cleaning station provides a flow of liquid cleaning fluid over said printhead.

35. The drop emitter defined in claim 30, wherein said fluid flow provided by said cleaning station is a gas flow over said printhead.

36. The drop emitter defined in claim 35, wherein said gas flow over said printhead dries liquid cleaning fluid applied to said printhead.

37. The drop emitter defined in claim 30, wherein said droplet deflector includes a plenum for conducting said flow of gas across said printhead to separate said ink droplets, and said cleaning station is formed at least in part from said plenum.

38. The drop emitter defined in claim 37, wherein said cleaning station further includes a source of liquid cleaning fluid, and a valve for selectively connecting said source to said plenum.

39. The drop emitter defined in claim 1, comprising an ink catcher, and said cleaning station provides a cleaning flow of fluid over said ink catcher.